

REMARKS

I. Introduction

In response to the pending Office Action, Applicants have cancelled claim 3, without prejudice, and amended claims 1, 4-8 and 10-12. More specifically, claims 8 and 10-12 were amended to address the objections thereto raised in the Office Action. In addition, claims 8, 10 and 12 were rewritten in independent format incorporating all of the limitations of the underlying base claim. It is noted that the claims are slightly modified so as to address the objections thereto as well as to make some grammatical corrections. As claims 8, 10 and 12 were indicated to be allowable if amended to independent format, it is respectfully submitted that claims 8, 10 and 12, as amended, are now in condition for allowance.

In addition, claims 1, 4, 6 and 7 were amended in an effort to more succinctly claim the intended subject matter of the invention. For the reasons set forth below, Applicants respectfully submit that claims 1, 4, 6 and 7 are patentable over the cited prior art reference.

Further, new claims 31-35 have been added. New claim 31 corresponds to original claim 5 rewritten in independent format. New claim 32 corresponds to original claim 11 rewritten in independent format. New claim 33 substantially tracks original claim 11 and is directed to the embodiment wherein an auxiliary substrate is disposed between the substrate and the ground layer. New claim 34 substantially tracks original claim 12 and has the same distinction as claim 33. No new matter has been added. As claims 5, 11 and 12 were indicated to be allowable, it is respectfully submitted that new claims 31-34 are also in condition for allowance.

New claim 35 has been added to recite an additional feature of the present invention not previously claimed. Support for new claim 35 can be found on page 6, lines 5-21. No new matter has been added.

Finally, it is noted that Figs. 1(a), 2, 3(b), 4(a)-9(g) and 11(a)-12(b) have been amended to correct the cross-hatching in the sectional view, and to include the legend "Prior Art" in the appropriate figures. The specification was amended to properly referring to the cross-sectional indication set forth in Fig. 1(b).

II. The Rejection Of The Claims Under 35 U.S.C. § 102

Claims 1, 4, 6, 7 and 9 were rejected under 35 U.S.C. § 102 as being anticipated by USP No. 4,979,076 to DiBugnara. Applicants respectfully submit that, as amended, the foregoing pending claims are clearly not anticipated by DiBugnara.

As recited by amended claim 1, referring to Fig. 3a of the specification, the plurality of penetration holes are disposed so as to form a matrix of one of aligned rows and aligned columns of penetration holes. As a result of the formation of such a matrix, the insertion of the chip components into the penetration holes can be performed precisely and in a rapid manner, thereby providing a reduction in the manufacturing time necessary to form the device and a corresponding cost savings.

In contrast, the device disclosed in DiBugnara does not disclose penetration holes formed in a substrate so as to form an array of aligned rows or columns of penetration holes. Indeed, the placement of the holes in DiBugnara does not appear to follow any particular pattern. As such, the placement of the components in the holes can require substantial time as the machine for placing the components in the holes

must first be programmed with information regarding position of the holes, which is a substantial process by itself as the holes are placed in a substantially random order (i.e., no defined pattern).

Accordingly, as anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, **Kalman v. Kimberly-Clark Corp.**, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983), and, at a minimum, DiBugnara does not disclose penetration holes formed in a substrate so as to form an array of aligned rows and columns of penetration holes, it is clear that DiBugnara does not anticipate amended claim 1, or any claim dependent thereon.

III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, **Hartness International Inc. v. Simplimatic Engineering Co.**, 819 F.2d at 1100, 1108 (Fed. Cir. 1987).

Accordingly, as claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

Furthermore, it is respectfully submitted that the following dependent claims distinguish over DiBugnara on their own. Claim 4 recites the use of a fixing member for filling the gap between the inside surfaces of the penetration hole and the chip component disposed therein (see, Figs. 4a-4d). In the current embodiment, the fixing

member comprises a thermosetting resin. Turning to DiBugnara, the reference does not appear to disclose the use of any such fixing member. DiBugnara discloses that the component is initially held in place in the hole by means of frictional forces (see, col. 5, lines 45-50. The component is then permanently fixed in the holes by solder disks 50-59. Thus, DiBugnara does not fill the gap between the component and the surfaces of the hole with a resin member, or any other member.

Further, claim 6 requires the formation of a support member to be formed, which functions to support the chip component (see, Fig. 4d and page 7, lines 4-8 of the specification. DiBugnara does not disclose any such support member.

Finally, DiBugnara does not appear to disclose the subject matter set forth in either of new claims 31 and 32.

IV. Request For Notice Of Allowance

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.


Respectfully submitted,

McDERMOTT, WILL & EMERY

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6/28/02

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Paragraph beginning at page 4, lines 11-25, has been amended as follows:

Fig. 1(a) is a sectional view at line [A-A'] I-I' showing a schematic structure of a module component in embodiment 1 of the invention, and Fig. 1(b) is a top view of the component. In the diagrams, reference numeral 1 denotes a resin substrate. In the substrate, chip resistors 2, chip capacitors 3, and other chip components are inserted into penetration holes having the nearly same hole shapes as chip components, and their end electrodes and circuit wirings 4a and 4b formed on both sides of resin substrate 1 are electrically coupled to compose a desired electric circuit. They are held and reinforced between first auxiliary substrate 5 and second auxiliary substrate 6. IC chip 7 and electronic components 8 that are hardly reduced in size are mounted on first auxiliary substrate 5 and are electrically coupled to wiring circuit 4c and further to circuit wiring 4a through conductor filling in through-holes 9. Reference numeral 7a denotes a molding resin, 10 denotes an external electrode terminal on module component 11.

IN THE CLAIMS:

Please cancel claim 3, without prejudice.

Please amend claims 1, 4-8 and 10-12, and add new claims 31-35 as follows:

1. (Twice Amended) A module component comprising:

a substrate made of resin having a plurality of penetration [hole] holes, said plurality of penetration holes disposed in said substrate so as to form a matrix of one of

aligned rows and aligned columns of penetration holes;

a circuit wiring disposed on both sides of said substrate; and

a chip component having a height almost the same as a depth of each of said penetration [hole] holes, said chip component being [and put] disposed in one of said [the] penetration [hole] holes for electrically coupling said circuit wiring disposed on both sides of said substrate[,

wherein the penetration hole is formed at a position according to a matrix, and wherein a chip component having a specific value is accommodated to compose a desired circuit].

4. (Amended) A module component according to claim 1, further comprising a fixing member for filling up a gap between said chip component [put in the penetration hole] and [the] said one of said penetration [hole] holes.

5. (Amended) A module component according to claim 1, wherein at least one of the penetration [hole] holes is tapered.

6. (Amended) A module component according to claim 1, wherein support means is formed at said one of said [the] penetration [hole] holes for supporting said chip component.

7. (Amended) A module component according to claim 1, further comprising an auxiliary substrate disposed [at least] over at least one side of the [both sides of said]

substrate.

8. (Amended) A module component [according to claim 1 further] comprising:
a substrate made of resin having a penetration hole;
a circuit wiring disposed on both sides of said substrate; and
first and second auxiliary substrates disposed [with holding] such that said
substrate is disposed [therebetween] between said first and second auxiliary
substrates, and

[wherein a desired circuit is composed by employing] a chip component
disposed in the penetration hole, said chip component having [of] a specified height
being greater than the depth of the penetration hole and not projecting from said first
and second auxiliary substrates [when put in the penetration hole], said chip component
electrically coupling said circuit wiring disposed on both sides of said substrate,
wherein the penetration hole is formed at a position according to a matrix.

10. (Amended) A module component [according to claim 1 further] comprising:
a substrate made of resin having a penetration hole;
a circuit wiring disposed on both sides of said substrate;
a chip component having a height almost same as a depth of said penetration
hole and put in the penetration hole for electrically coupling said circuit wiring disposed
on both sides of said substrate;
an auxiliary substrate disposed over said substrate;
an IC chip mounted on [an] said auxiliary substrate; and

a capacitor put in [a] said penetration hole immediately beneath said IC chip to be coupled directly with said IC chip,

wherein the penetration hole is formed at a position according to a matrix.

11. (Amended) A module component according to claim 1, further comprising a ground layer disposed [one of] beneath said substrate, [and by way of an auxiliary substrate, wherein] said ground layer [is] being coupled with said circuit wiring disposed on a lower side of said substrate.

12. (Amended) A module component [according to claim 1 further] comprising:
a substrate made of resin having a penetration hole;
a circuit wiring disposed on both sides of said substrate; and
a chip component having a height almost the same as a depth of said
penetration hole and put in the penetration hole for electrically coupling said circuit
wiring disposed on both sides of said substrate;

an auxiliary substrate disposed over said substrate;
an IC chip mounted on [an] said auxiliary substrate; and
a ground layer disposed [one of] beneath said substrate [and by way of an auxiliary substrate],
wherein the penetration hole is formed at a position according to a matrix;
wherein a chip component having a specific value is accommodated to compose
a desired circuit; and

wherein said IC chip is coupled directly with said ground layer.

Please add new claims 31-35 as follows:

31. (New) A module component comprising:

a substrate made of resin having a penetration hole;

a circuit wiring disposed on both sides of said substrate;

a chip component having a height almost same as a depth of said penetration hole and put in the penetration hole for electrically coupling said circuit wiring disposed on both sides of said substrate; and

wherein the penetration hole is formed at a position according to a matrix,

wherein a chip component having a specific value is accommodated to compose a desired circuit, and

wherein the penetration hole is tapered.

32. (New) A module component comprising:

a substrate made of resin having a penetration hole;

a circuit wiring disposed on both sides of said substrate;

a chip component having a height almost same as a depth of said penetration hole and put in the penetration hole for electrically coupling said circuit wiring disposed on both sides of said substrate; and

a ground layer disposed beneath said substrate, said ground layer being coupled with said circuit wiring disposed on a lower side of said substrate,

wherein the penetration hole is formed at a position according to a matrix, and

wherein a chip component having a specific value is accommodated to compose

a desired circuit.

33. (New) A module component comprising:

a substrate made of resin having a penetration hole;

a circuit wiring disposed on both sides of said substrate;

a chip component having a height almost same as a depth of said penetration hole and put in the penetration hole for electrically coupling said circuit wiring disposed on both sides of said substrate;

an auxiliary substrate disposed over said substrate; and

a ground layer disposed beneath said auxiliary substrate, said ground layer being coupled with said circuit wiring disposed on a lower side of said substrate.

34. (New) A module component comprising:

a substrate made of resin having a penetration hole;

a circuit wiring disposed on both sides of said substrate;

a chip component having a height almost same as a depth of said penetration hole and put in the penetration hole for electrically coupling said circuit wiring disposed on both sides of said substrate;

an auxiliary substrate disposed over said substrate;

an IC chip mounted on said auxiliary substrate; and

a ground layer disposed beneath said auxiliary substrate,

wherein the penetration hole is formed at a position according to a matrix, and

wherein said IC chip is coupled directly with said ground layer.

35. (New) A module component according to claim 1, further comprising a dummy component disposed in another penetration hole of said penetration holes, said dummy component having a size almost the same as said chip component and functioning as an insulator.